

# KEEPING PACE

A Monthly Newsletter Devoted to the Art of Darkroom Photography

Volume 39 September, 1990

## The slow death of the Pan Matrix system

The end of a system that has been used by quality conscious portrait photographers around the world. Kodak has decided to discontinue the manufacturing of Pan Matrix film sometime during the fourth quarter of 1991. Apparently, the sales volume for the product has fallen off to such a degree that they can no longer support an effective manufacturing process. This news from Kodak has been expected for quite some time. In fact, a few years ago Kodak had experienced a major error in coating a complete batch of Pan Matrix film. This placed many labs that depended on Pan Matrix film in a difficult position. Many of these labs and studios were forced to go out of business. This was the first indication that the process was difficult to manufacture.

I knew from personal experience that the material had to be kept cool and dry while in storage otherwise parts of the matrix emulsion wouldn't even wash off properly.

The normal matrix film will still be available as the sales for this particular product has been growing somewhat because of the new interest in Dye Transfer from the art community.

According to my own assessment, many more of my students are getting involved in Dye Transfer worldwide.

I recently spent some time with Ctein, a marvelous Dye Transfer color printer based in Daly City, CA. that has specialized in making his dye prints from color negatives and has used Pan Matrix film with much skill and precision.

I have always said that the skill of a printer is just as im

portant as the skill of the photographer. Ctein really proves this point well.

The ability to burn and dodge with accuracy and the use of color filters while dodging or burning can sometimes make the difference between a mediocre print or a great print.

I have seen Ctein's work. He is a master printer and I admired his work very much. I don't know what he will do in the future. I am sure that he will still be a voice to be heard.

Ctein has recently finished a new publication for Kodak in which he describes a method of making separation negatives from color negatives.

Kodak T-Max film and regular Matrix film are used to make the necessary separation negatives.

The Kodak Publication number is E. 81-N, "Using Kodak Matrix Film, to Make Dye Transfer Prints from Color Negatives."

Speaking of printing skill. Some of the negatives that were supplied to Ctein were far from being called good. Some were as absolutely flat as a pancake. Ctein's ability to juggle the matrix tanning developer so that more or less contrast could be realized, and the ability to double and even triple-transfer a specific matrix to even further control the final outcome was well demonstrated.

---

Printing skill is seen in the works of the masters, such as Ansel Adams, Edward Weston, John Sexton, Paul Caponigro, and many others. I doubt if any of these great photographers and darkroom experts ever made a straight print, once they mastered the printing skills. The same professional expertise is expected from a color printer.

I have rarely made a straight print from a transparency. Most of the prints that were made by my staff and by me, personally, were dodged or burned in to the proper densities while exposing the matrices. My main goal was to make a straight print, once the matrices were processed.

Making separation negatives from transparencies means that some sort of contrast masking is necessary because of the contrast of the original.

**However, making a Dye Transfer print from a transparency that is too flat to be masked, what do you do?**

This is a relatively simple matter.

Instead of making principal masks in the normal fashion, by pre-masking, try to make a set of straight negatives from the transparency without making masks.

You will have to adjust the exposure times, but that is to be expected.

This will give you more detail in the highlight areas than any other method. Then make a set of post-masks. Here is how this is accomplished.

Make one exposure each from the red filter negative and green filter negative by contact, onto 2 sheets of Pan Masking film. Actually, any orthochromatic masking film could be used.

The object is to make a mask with a gamma of .10. The exposure should show detail just up to the highlight area. Don't over-expose the mask.

Use the mask made from the red filter negative with the red filter negative, and then with the green filter negative, when exposing the matrices. Use the mask made from the

green filter negative with the blue filter negative when making this matrix.

This will give you some semblance of color correction without sacrificing the quality of the image by pre-masking.

Less than normal strength highlight masks should be made, otherwise highlight detail will be washed out.

**My eyes were opened wide when I visited Charles Berger**, the inventor of the new Ultra Stable carbon color printing system. This system is a new approach to an old color printing system. The results will last longer than any other process yet invented.

Charles went through much research to find the appropriate colored pigments that represented the purity of the Cyan, Magenta, Yellow, and Black inks that are used in the printing profession.

The key ingredient is the colored pigments mixed, sensitized, and then coated onto a sheet of shrink-proof polyester film.

The system works as follows;

A set of screened separation negatives are produced, usually by a scanner, with a fine screen size somewhere around 350 lines per inch. These negatives are registered with a pin system.

The rest is done in normal room illumination.

The negative is placed in contact, emulsion to emulsion, with the appropriate colored pigment sheet that it represents.

An exposure device, usually a plate maker, is used to make the image. A very strong ultra violet light source is used. These devices are found for sale frequently in trade magazines such as "Horse-trader" P.O. Box 11712. Santa Ana, CA 92711. They specialize in used graphic arts equipment. I have seen some advertised for as little as \$500.

After the exposure, which has hardened the sensitive pigment, the pigment material is moistened, and then placed in contact with registration onto a receiver sheet of white polyester coated with an emulsion. This too has been moistened. The pigment sheet is rolled or squeegeed into position and left in this condition for a minute or so. Timing is not critical. The pigment is quite soft and will stick to the receiver sheet.

Then the entire sandwich is placed into a tray of hot water. The pigment sheet will begin to dissolve. Eventually, the entire sheet can be pulled away from the receiver sheet. The colored blob that remains on the receiver sheet can be hosed off with a gentle stream of hot water until all that re-

mains is the colored image produced by the exposure. This receiver sheet with the colored image on it is dried in a warm, dust free cabinet.

The next negative and the appropriate colored pigment is exposed while the receiver sheet is drying.

When ready, proceed to transfer it also to the same receiver sheet, in register. Do the same steps as before and the image will transfer in register to the first image. Do the same steps from dry to dry stage for each additional colored pigment.

The printing order in the printing trade is for the yellow to be placed first, then the magenta, then the cyan, followed by the last image, the black.

In this process, the yellow is first, followed by the black, magenta and cyan.

The main reason for making screened negatives is because the inks were opaque. However, these pigments are transparent. The screened negatives are needed because these pigments cannot be printed with a continuous tone system.

The results were impressive. The image had detail in both ends of the print. The sharpness is unparalleled.

The print is also able to be manipulated by dodging and burning. Maybe not as simply as it can be done with

conventional systems, but dodging and burning is possible.

At this time, **Polaroid** will continue to manufacture and sell their Permanent Color Pigment materials, but not the receiver sheets for the process. **Charles Berger and his Ultra Stable Pigments has the edge for this process.**

His materials have much more in their favor. In view of the cost of the materials, there is no reason why a proof print couldn't be made on the same materials.

Just how expensive is this material?

A set of four pigments and a receiver sheet costs around \$30 for a 16x20 size print.

Do you have any idea what Matrix film and a sheet of prepared Dye Transfer paper and a set of dyes costs for the same size?

The prices are actually higher.

The real concern is the cost and quality of the separation negatives.

I have contacted one firm in Los Angeles called "Color Match" that will make a set of 16x20 -350 line screened separations from a 4x5 transparency for \$250. That is a pretty good price.

If you do a little math you will discover that for around \$300 you can make a print that could possibly sell for \$2000.

That is what these prints are selling for, presently. I don't know where the market place is for this process. It could be fine portrait photographers and top notch art photographers. This needs further examination.

The ideal method for an enterprising lab technician is to own his own scanner. The cheapest scanners cost around \$20,000. The better one's cost in the hundreds of thousands. This is not a cheap system. It does produce very long lasting prints. But the ability to manipulate the image is most important. If you can't make the print to the clients wishes, you will be in for a few remakes.

**The best part of the process is this.**

Once you establish the correct exposure for the pigments, you can make as many prints as you wish and they will be identical. A new print could be made every 20 minutes. What a boon for a limited edition of some fine art photography, or fine copies of original paintings.

Making many identical prints is virtually impossible with Dye Transfer. The dyes will be constantly changing due to inaccurate replenishment methods.

Some of the tricks I describe in my books and video tape are also not that easily accomplished with this new process, but the images are

great as long as the separation negatives are great.

The fine screen size almost eliminates any visual sense of a screen when looking at the print.

I am in touch with 3M. They will be sending me a sample set of colors to play with. I am interested in discovering a way to make a quick proof, inexpensively. If and when I do come to any new conclusions I will let you know.

---

**Masking seems to be a problem for some people.**

They don't want to spend the money to get a quality system.

If you consider this. Each Cibachrome print you produce will cost somewhere around \$5 each for an 8x10 print. If you make 10 prints per week you will have spent around \$50. This is for one week.

If you are a serious printer, you will be fooling around in your darkroom after a hard days work. If you are a professional and make many prints, you will be still be fooling around in your darkroom. You will be doing this for many weeks.

The simple answer is this. If you feel that it costs too much money for a good registration system, call your local graphic arts supplier and find out the price for an alternative registering system.

Berkey, Carlson and others are in the same market as

Kodak and Condit.

The only difference is this, if you try to call either Berkey or Carlson and try to get them to understand what you are trying to accomplish you will find that they are not as understanding as Condit Mfg.

Some people advocate using a soft and diffused mask so that replacing the mask back to the original will be easier.

Not really.

You need the accuracy of replacing the mask otherwise you will get edge effects that will drive you mad.

---

I have read articles about processing your E-6 transparencies to such a degree so that they will be able to print onto Cibachrome paper with no masking. This will work, but I feel that any attempt to change the quality of the original transparency is foolish. The transparency material is designed to be looked at by transmission. Kodachrome slides were not made to be printed. However, here we are and we want to make prints from our prize winning shots. What to do?

If you know what kind of contrast your enlarger will produce with any particular material then it is possible to make a mask that will not only help to bring the transparency to the optimum density range but also allow one to make specific color

enhancements.

This is impossible with any other kind of "solution" to the contrast problem.

In fact, I welcome the fact that the transparency must be masked in order to make a pleasing print. In what other way can a creative color printer use his skills. Simply dodging and burning are only the beginning steps to quality control.

I keep reading reports from scholarly people that sound as if they really know what they are talking about. They seem to want to skirt the notion that masking is a necessary step in making quality prints. However, I have discovered that it takes eyes, feelings and brains to produce a quality print. The eyes and feelings have it. If you can't provoke an emotional feeling in your work, then your work, no matter how accurate, will not ring any bells.

I remember when working in the old Carbro process years ago, when all we had to work with were separation negatives on glass plates. These were usually supplied to us by the client who was not a color technician, by any means. We had contrasty negatives, flat negatives, badly lit and poorly processed negatives with "wedging." (This meant that if the negatives were processed in hangers in a

tank and were not aligned in the same direction, the negatives would not be processed to the same degree in all sections of the image, and color shifts would take place in the image area. This is called wedging.)

Even with all of the possible faults of the process, not to mention the inaccuracy of combining black and white prints with colored pigments, we were still able to make prints that were then, and still are today, the envy of most darkroom technicians. All this was done by the "seat of the pants" approach. If you had a trained eye and had some experience in the actual handling of the materials, you could usually produce a pleasing print.

Clients would shoot us down if our efforts did not meet with their approval, because we were not knowledgeable enough to explain why we didn't meet the clients requirements. To be in the Carbro business during the late 1940's was an experience.

There are publications besides my own that talk about masking control and techniques that could possibly apply to your problems. "Perfect Color Printing" by the authors and editors of "Darkroom Techniques" is available by subscription from;

**Darkroom and Creative Camera Techniques**  
**P.O. Box 48312,**  
**Niles IL. 60648**

Here is some information about the **Iford CAP 40 processor.**

I have discovered some of it's idiosyncrasies.

For instance, using P30 Chemistry in powder form is much cheaper than liquid, easier to handle, and will produce more prints per chemical load. All it take is the patience to mix the powders. Really, nothing to it.

The machine is not without it's faults. The paper is fed through the machine in a floating position and is guided through the rollers with ease. However, if the tray that the paper floats across is not perfectly flat, then the paper will jam. All it takes is to manipulate the one screw that holds it in position. If you screw the tray too tightly, the tray will warp. Too lightly, and it will warp in the other direction. The trick is to make sure that you are level. Then turn the machine on, and look at the chemistry running across the tray. If the warp is noticeable, you can adjust the warp until it is flat across the entire tray.

The machine runs at 3.4 inches a minute. I can load an 8.5 x 11 inch sheet of paper in the horizontal

position and keep feeding prints every 2:30 minutes. This means that a considerable amount of work can be fed through the machine with little difficulty.

The paper emerges from the machine with a cold, almost green look. Washing the print for a short time will turn it much warmer. It will then dry down to it's proper color. Don't attempt to "read" the image in a wet stage. You will never be able to "see" it properly.

The new ICP-42 is basically the same machine except for the fact that it has a variable speed and temperature control. This will enable you to use different processes as well as Cibachrome.

The machinery that runs the pumps and roller systems have a protruding "screw" that can be connected to the dryer assembly, called the IWD-42.

The new machine has a slightly larger entrance throat to eliminate some of the headaches that were associated with the original CAP 40.

There are others on the market, including Fujimoto. Their machine is a bit more sophisticated. So is the cost. However, it will handle a number of different processes by the addition of modules, and that it can handle any kind of material up to 20x24.

These machines contain optional replenishment systems.. The extra cost is still much lower than the conventional roller systems. The amount of processing is enormous by contrast with Ilfords system.

The CAP 40 will turn out about 35 prints per load at about 24 per hour. The Fujimoto system can crank out 230 per hour, dry to dry, without having to change chemistry.

If you are a serious lab owner, it would be prudent to look this machine over. However, if you are only making a few prints at a time, then a simpler CAP 40 or the new ICP 42 is a fine machine.

---

I recently found a procedure for making **C prints with different amounts of contrast** without resorting to masking. This was an article by Robert Anderson, an engineer, chemist, photographer and inventor.

Make an exposure on C paper using slightly less exposure.  
Develop the paper in the standard developer for the standard time.  
Fix in a black and white fixer for 2 minutes.  
Turn on the lights.  
Wash the print for 3 minutes in running water.  
Bleach for 2 minutes Do not use Blix. (Make your own bleach using 25g of Pottassium Ferricyanide and 7g of

Potassium Bromide to one liter of water.)

Wash again for 3 minutes  
Re-develop again in **color developer** until contrast and density look about right.

**This time use Blix.**

Wash and dry. From the examples that I have seen in Darkroom Techniques Magazine, I was impressed.

---

**Here is a method for cleaning old soiled slides without doing fatal damage to them.**

Years ago I had to make a series of Dye Transfer color prints for a major display at the Arco Center for the Arts in Los Angeles.

The images were all produced on old (K-12) 35mm Kodachrome.

These slides were kept in their original mounts and kept between plastic film preservers. They were absolutely filthy.

I used a 20 power glass to examine the transparencies and found one original in particular that had many thousands of little specks of dirt imbedded into it's emulsion.

I first placed the transparency into lukewarm water with a few drops of Kodak's Photo Flow solution added to it. I gently used a chamois cloth to loosen some of the specks. This removed thousands of specks but still left many thousands more.

Are you familiar with the little vibrators used by jewelers when they clean rings? This same little vibrator was used to clean this slide. I washed the slide 4 times for 15 minutes each time. The cleaning solution consisted of warm water and a few drops of Kodak's Photo Flow. When I was through, the transparency looked pretty good. Even with all of this, I had to etch the matrices even further for almost a full day in order to produce a clean print.

Protect your slides. Use the correct plastic liners sold by "Light Impressions" from Rochester, N.Y.

---

Some of you are making color prints and have some, or most, of the necessary registration equipment already. If you do, and you would like to experiment with a different approach to making Ektacolor prints try this on for size.

Instead of using a color head with cyan, magenta, and yellow filtration, purchase a set of separation color filters, red 29, green 61, and blue 47b.

Small size filters can be used under the lens. I prefer the larger sizes so that I can place the filters in the filter drawer.

The main advantage here is that you use separation negatives to make the print, rather than an original color negative.

The object is to expose each layer through the proper separation filter. The amount of contrast and color control is outstanding.

Years ago, in Los Angeles, I had a lab that specialized in making Dye Transfer prints and C prints. The C prints were done in the conventional way.

Some clients couldn't always afford a Dye Transfer print, but they wanted a great print.

A less expensive print could be made that would be much more manipulative than a common C print. We could control the overall contrast as well as the individual contrast between layers. We could also manage to increase or decrease color saturation by the use of the proper mask. We could make special highlight masks for each layer or one mask overall. The list could go on for many pages.

So we devised this system for making "**Super C Prints.**"

You won't know to what contrast level your separation negatives must be unless you know what your enlarger will produce for a specific kind of paper, in this case, Ektacolor paper.

**Here is the system:**

Before one starts with this approach, the contrast produced by your enlarger must first be determined.

This is done by placing a 21 step grey scale in your enlarger, masked off, of course, and projected onto a sheet of Ektacolor paper.

This is done with no filters in the enlarger.

Make a series of different exposures so that one of them will show the scale in it's best exposure.

Look at the scale. Find where the light steps and the dark steps just begin to show some detail. Mark these two steps.

Remove the original grey scale from the enlarger and read the identical steps with a densitometer.

Subtract the smaller reading from the higher reading to obtain a density range.

The object is to make your final negatives to the same density range.

This is a course by itself. If you have my book on Dye Transfer, you will find it in the section marked "Separation Negatives."

If you don't have the book, let me know, and I will send you enough information so that you could understand how it is done.

In making the separation negatives, you will be forced to make contrast masks, known as principal masks, in order to place the transparency in a better density range before making the final separation negatives.

This will mean that masks

are made in the following fashion:

Two masks are all that is really necessary.

Make one exposure, by contact, through the red filter on one sheet of masking film, and one exposure through the green filter, also on masking film, with registration.

These masks must be processed to a pre-determined density range before committing them to the production of separation negatives. These masks are then placed in register with the transparency in the following order. The red filter mask is used when exposing the red filter separation negatives, and with the green separation negative.

The green filter mask is then used when exposing the blue separation negative. Sounds confusing? You ain't heard nothin' yet.

If necessary, split masks can be made in order to enhance a specific color, or colors. In this case you must make at least three masks. One for each separation negative. The first mask partially through the red filter and then again through the green filter.

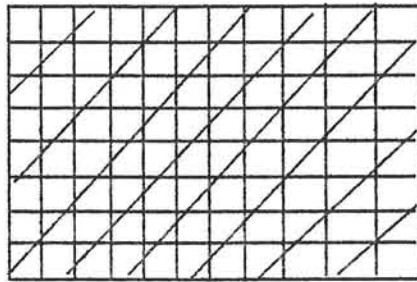
The second mask is made partially through the red filter and then again through the blue filter.

The third mask is made partially through the green filter and then again through the

blue filter.

In order to find the ratio of the exposures through the different color separation filters, simply make a test with a sheet of film that has been exposed to room light and processed. This will act as a dummy image.

Make a color test using the system described.



First make a series of horizontal exposures across the sheet of paper using the red filter.

Then make a series of exposures vertically across the sheet of paper using the green filter.

Then make a series of diagonal exposures across the sheet of paper using the blue filter.

After processing, you undoubtedly will be able to find an area that looks fairly grey. Find the proper exposure for each filter and this will be your starting point for making a print.

Once these exposures are determined, you can then expose your separation negatives through the same filters onto one sheet of paper. The differences in

density of the negatives grey scales can be used to determine the correct exposure for each negative.

The difference in color saturation and density will astound you.

The possibilities are endless. At any time in making this "Super C Print" you can add different kinds of contrast masks or highlight masks to achieve a different kind of "look."

A specular highlight mask can be added to the set or to only one color and achieve a different kind of quality. Creativity is the name of the game. If you can control your images with this kind of "magic," there is nothing that your mind can't conjure up.

**This is my promotion corner.** I am still selling by wares.

The book, "The art of Photo Composition" is still \$50. plus \$3 s&h

The video package on the Dye TRansfer system is still \$200 plus 12 s&h

My new book, "A Professional Approach to Cibachrome is still \$135 plus \$6 s&h.

**Bob Pace**  
13900 Trinidad Dr.  
Victorville, CA 92392

619-241-0905

Thanks